

DATA SHEET



GATEWAY FOR WIRELESS NODES AND SENSORS

MODEL EWG-01

OVERVIEW

Wireless sensor networks are vital in monitoring construction sites, large structures and landslide areas. They are extensively used in applications where geotechnical and other sensors are used for data collection and transfer to a central server for access by multiple users.

Encardio-rite offers an innovative wireless solution that allows real-time monitoring of geotechnical and structural sensors in challenging conditions with reliable data transfer without any delay. Encardio-rite model EWG-01 gateway is used as a main networking device, which uploads all the gathered sensor data via suitable nodes, to the Encardio-rite cloud server or a third party server.

With real-time data collected from the wireless system, the project owner, consultants and contractors remain aware of the slightest change in the data. Early warning system allows timely decisions, increased safety, reduction in project delays and consequently cost effectiveness.

FEATURES

- Provides reliable and high resolution readings with long term stability
- Advanced wireless data collection protocol that provides seamless connectivity in large sites and tunnels
- Easy to install and monitor hard to access sites and tunnels remotely
- Able to store readings internally when internet connectivity is not available
- Empowers real-time decision-making that increases productivity and safety

- Minimizes maintenance overheads
- Battery life 6-60 months depending upon application

APPLICATION

- Critical applications where real time monitoring and early warning is required in order to protect life and valuable assets.
- Large civil engineering projects
- Dams, barrage, mines, tunneling, structural, landslide, bridge monitoring
- Deformation of embankment, retaining wall monitoring

DESCRIPTION

Model EWG-01 gateway acts as a network node for communication with different types of nodes (vibrating wire, analog, digital and relay nodes) having altogether different transmission protocols.

The gateway serves as an exit point/central hub for wireless data obtained from the sensors as the readings pass through or communicate with the gateway prior to being routed to a FTP or cloud server.

The gateway can collect data from practically any type of sensor like vibrating wire, analog and digital through suitable nodes. Options of single channel and multi-channel nodes are available to give user flexibility to make better cost effective selection, depending on site requirements. List of Encardio-rite nodes and sensors that can be connected to gateway is given below:

EWN-01V Vibrating wire node – 1 channel. To be used with vibrating wire sensor

EWN-08V Vibrating wire node – 8 channel. To be used with vibrating wire sensors

EWN-01D Digital node. To be used with SDI-12 interface sensors

EWN-01A Analog node – 1 channel. Suitable for sensors with millivolt, voltage, 4-20 mA, wheatstone bridge outputs

EWN-04A Analog node – 4 channel. Suitable for sensors with millivolt, voltage, 4-20 mA, wheatstone bridge outputs

EWN-01R Relay node. To enhance range of any node

EAN-95MW Wireless tilt meter. It is a complete unit in itself including the sensor and the node

WIRELESS SYSTEM

In our end-to-end wireless monitoring system, the sensors are interfaced with the long range, low power wireless network through nodes that send recorded data to the Gateway with utmost reliability. Gateway uploads the collected sensor data to the central/cloud server.

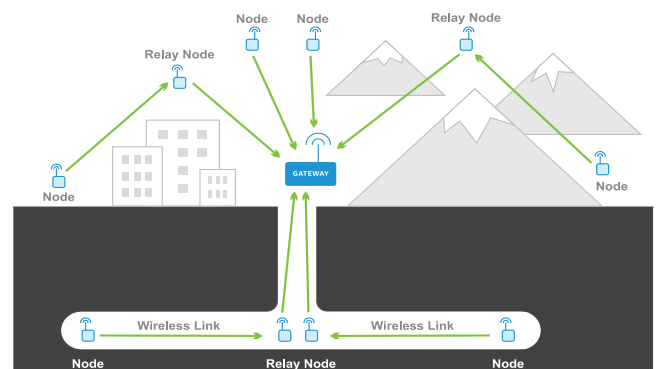
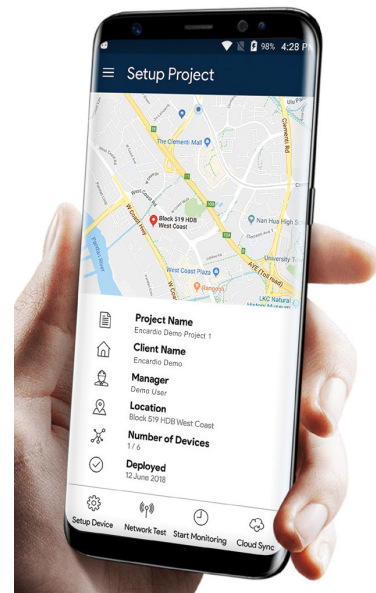
The long range radio frequency based wireless data collection network provides complete automation of monitoring with seamless connectivity in large construction sites, tunnels and landslide projects. The wireless system eliminates the need for running lengthy cables. It is especially useful at locations where sensors are distributed over wide areas and running cable lengths to long distances can be tricky and/or at locations where construction activity can damage the running sensor cables.

Encardio-rite wireless system is a highly scalable system. It allows client to add or replace nodes in an ongoing project, without compromising data integrity.

The nodes can be configured to scan and transmit data at any frequency between 2 min to 2 hr, depending on site requirements. The system automatically mitigates well-known wireless problems like signal blockages and interference, allowing the sensors to reliably send their data to the gateway every time. Every single radio transmission in the system is secured using AES-128 encryption to maximize security of the sensor data gathered by the system.

A cloud-hosted data management and configuration software is used to manage the network. The configuration is done with an easy to use smartphone application that comes free with the system. The application provides step-by-step instructions and displays whether the radio signals or battery strength is good enough.

REAL-TIME WEB-BASED DATA MANAGEMENT SYSTEM





Drishti, a cloud-hosted data management software is available to process and manage the huge data collected at project site. The database management system allows analysis and visualization of the sensor data collected from project site/installation locations.

The data is accessible 24 x 7, in meaningful visual formats, to all the related authorities. The system can generate automatic reports and provide automated alerts over SMS or email for any reading crossing the pre-defined alert levels.

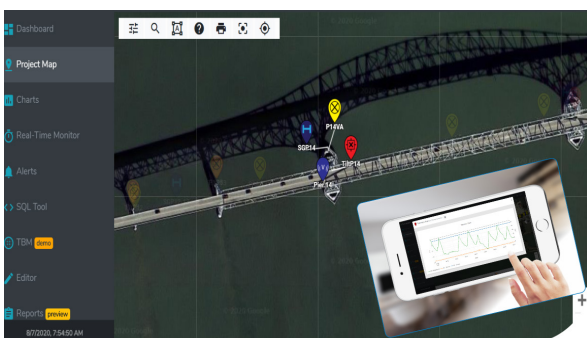
The data management system includes everything needed to publish monitored data in real time on internet. Users can interact with software using their web-browser, when connected to the internet, from any location in the world. It allows multiple authorized users at different locations to view any data or report from the same project site simultaneously. The real time display, graphs & reports can be viewed using popular web browsers like Microsoft Internet Explorer or Mozilla Fire Fox amongst others.

Data from Encardio-rite cloud based web monitoring service can be accessed from any type of device, like a desktop or laptop, tablet, smart phone, etc., that supports a standard web browser.

Encardio-rite cloud services work on a rental model. User has to pay a small setup fee for first time and then a monthly rental has to be paid for accessing the data over the cloud as long as required.

SPECIFICATIONS

Nodes per Gateway	Up to 50
Storage	Industrial grade micro SD Card with 16-32 GB
Power consumption	250 mA typical / 1.5 A peak
Interfaces	
USB Device Port	USB 2.0 full speed (Micro B connector) 5 V
Network interfaces	Integrated 3G/4G modem & antenna (HSDPA, EDGE, GPRS) quad band Ethernet over USB 2.0
GPS	GNSS high sensitivity GPS module (excluding antenna)
Radio Frequency	
Radio bands	Sub-1 GHz band – complies with unlicensed ISM band specifications in most countries
Link data speed	625 bps – 2.5 kbps variable bitrate
Data security	AES128 encrypted end to end data
System Power Requirements	
Power supply	12 V DC @ 2 A nominal, solar panel
Internal non-rechargeable batteries	1 D-Cell Li-SOCI2 3.6V Nominal Voltage as backup power
Typical current drain	200 mA typical operating
Battery Operating time	Backup battery will support standby mode (RF only) for 6 weeks current
Environmental Specifications	
Operating temperature	-20 to 60°C
Storage temperature	0 to 40°C
Protection	IP67



*All specifications are subject to change without prior notice

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TUNNELS



HYDROELECTRIC



CONSTRUCTION



STRUCTURAL



METRO & RAIL



BRIDGES



MINING